WORKING GROUP

on

TEACHER SUPPLY AND DEMAND

FINAL REPORT

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April 25, 2001

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Norbert Hartmann
Assistant Deputy Minister
Business and Finance Division
Ministry of Education

Mr. Hartmann,

We are pleased to provide you with the final report of the Working Group on Teacher Supply and Demand.

Sincerely,

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Ontario Teacher Supply and Demand

Executive Summary

In January 2001, a Working Group of education sector representatives was formed and asked to reach consensus on a teacher supply and demand forecasting model. The following organizations contributed representatives to the Working Group:

- Council of Ontario Directors of Education (CODE)
- Ontario Association of Deans of Education (OADE)
- Ontario College of Teachers (OCT)
- Ontario Principals' Council (OPC)
- Ontario Teachers' Federation (OTF)
- Ontario Teachers' Pension Plan (OTPP)
- Ontario Ministry of Education (EDU)
- Ontario Ministry of Training, Colleges and Universities (TCU)

In this report, Working Group members present supply and demand projections over the rest of the decade. Working Group members followed the methodology established in past studies of the job market for the 116,507 full-time equivalent (FTE) teachers employed this year by Ontario's publicly funded school boards.

For most components of teacher supply and demand, data were reliable enough to allow the Working Group to reach a consensus on projections. However, information gaps and/or year-to-year volatility in the data result in different projections being plausible for demand to replace teachers who leave the system before retirement, net flows of teachers going on parental leave and the supply of former teachers returning to the profession. Two scenarios -- A and B -- are presented to reflect possible ranges for total supply and demand due to different projections for those components that are hard to predict.

In scenario A, projected supply and demand are close to balanced over the next two school years. Enrolment is expected to decline slightly after 2002/3. As a result, projected demand falls off after 2002/3 and projected supply exceeds demand for most of the rest of the decade, even if the annual supply of new graduates returns to the 5,000 level in place up to 1999.

In scenario B, annual teacher demand is projected to be higher throughout the decade. The projected number of teachers who leave the system prior to retirement is higher than in scenario A.

Annual teacher supply is projected to be lower in scenario B than A. The number of experienced re-entrants, teachers who leave the system but subsequently return, is projected to be lower in scenario B. Projected supply falls short of demand in 2001/2 and 2002/3. Falling enrolment brings demand and supply into rough balance in 2003/4 and 2004/5. But, if supply of new graduates returns to the 5,000 level, total supply in scenario B falls short of demand from 2005/6 on.

In neither scenario is there any attempt to quantify the number of additional teachers required to address the current deficit in available teachers represented by reported high demand for supply teachers, a temporary peak in pensioned teachers employed as supply teachers and teachers employed under Letters of Permission.

In addition to the global supply and demand for teachers, there is an additional issue of the lack of an adequate match between subject, level and language of certification of available new teachers and the specific needs in various regions of the province. More supply is required to address these issues.

School boards and the news media have reported concerns about high demand for supply teachers in several recent reports. Working Group members followed

the path of past studies and did not build supply teachers into the teacher supply and demand model. Information gaps and year-to-year volatility in available data make it difficult to forecast how many supply teachers will be promoted to full- and part-time teaching jobs each year and how many new graduates will start their careers as supply teachers.

Surveys show that school boards have the most difficulty filling full- and part-time openings for teachers with special training in particular subjects -- e.g., French as First Language (FFL), French as Second Language (FSL), English as Second Language, special education, mathematics, technological studies, science including physics, chemistry and computer science, music. School boards can apply for a Letter of Permission to hire someone with subject-specific expertise but lacking a teaching certificate. More than 800 Letters of Permission have been issued in each of the past two school years.

The Province responded to concerns about teacher supply by increasing funded student spaces in consecutive teacher education programs from 5,000 in 1998/9 to 6,500 in 2001/2. However, the two French-language programs have not been able to increase the number of graduates as much as English-language programs. The decline in applicants to all programs for the next academic year will have a greater impact on French-language programs. It may not be possible to maintain the same number of French-language graduates qualifying to teach at the Junior/Intermediate (grades 4-10) and Intermediate/Senior (grades 7-12) levels.

The terms of reference for the Working Group were focused on an examination of the model for forecasting teacher supply and demand. The Working Group recommends that the following steps be taken to improve the data necessary to project teacher supply and demand:

1) Research to improve estimates of new teacher supply and retention – e.g., OCT "Transition to (and First Five Years of) Teaching" study.

2) Research on the use of supply teachers and the profile of the occasional teacher pool.

3) Research to quantify or estimate additional teacher supply required to provide an appropriate match of candidates to positions by subjects or divisional qualifications, by geography, board type or language.

4) Ongoing refinements of the forecasting model with annual updating.

5) Further sharing of data among stakeholders.

6) Investigation into whether supply and demand issues are affecting the availability or delivery of programs, e.g., "week in the life of a school" study of a representative sample of selected schools focusing on:

- Are programs being canceled because no qualified teacher is available?
- Is daily delivery of programs affected by low availability of supply teachers?

1. *Introduction*

In this paper, the findings of a Working Group on Teacher Supply and Demand are presented. The following organizations contributed representatives to the Working Group:

- Council of Ontario Directors of Education (CODE)
- Ontario Association of Deans of Education (OADE)
- Ontario College of Teachers (OCT)
- Ontario Principals' Council (OPC)
- Ontario Teachers' Federation (OTF)
- Ontario Teachers' Pension Plan (OTPP)
- Ontario Ministry of Education (EDU)
- Ontario Ministry of Training, Colleges and Universities (TCU)

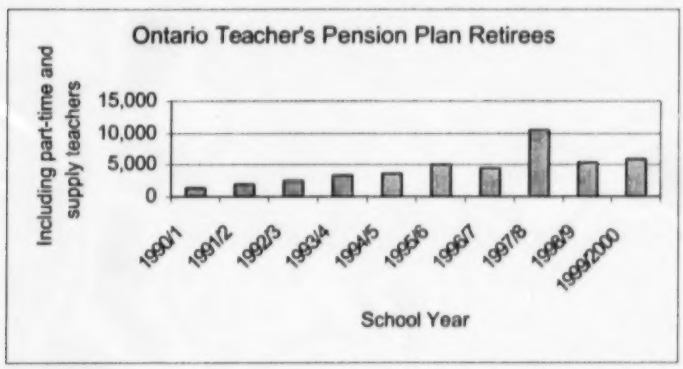
The same organizations participated on the Minister's Task Force on Teacher Recruitment and Renewal, which was established in 1998 and reported in 1999. The Minister's Task Force recommended ongoing collaboration on a process for determining the number of qualified teachers required to fill the volume of new teaching opportunities in the province. The Working Group was formed in January 2001 to follow up on the Task Force recommendation.

The Working Group was asked to reach a consensus on:

- an analytical framework for Ontario teacher supply and demand
- data sources for the model; and
- next steps for further research on data issues.

2. Context

Concerns about teacher supply and demand came to the fore after the Province and the Ontario Teachers' Federation (OTF) agreed to reduce the eligibility threshold for an unreduced Ontario Teachers' Pension Plan (OTPP) retirement benefit from 90 pension points -- age plus years of pensionable service -- to 85 points from 1998 to the end of 2002. Retirements had already been increasing during the 1990s because the large cohort of teachers hired to teach the "baby boom" generation during the 1950s and 1960s was starting to reach retirement. Teacher retirements jumped from 4,469 in 1996/7 to 10,563 in 1997/8 in the wake of the 1998 agreement.[1]



Source: OTPP

At the end of 1998 the Ontario College of Teachers (OCT) warned of the potential for teacher shortages arising from the surge in retirements.[2] The OCT forecast that 41,000 of their 164,500 members with active teaching certificates and living in Ontario in September 1998 would retire from the profession over the next five school years -- an average of 8,200 per year. The following five school years from 2003/4 to 2007/8 would see retirements fall slightly to 7,400 per year. The OCT predicted that "serious shortages of qualified teachers will soon affect

[1] The impact of retirement on the demand to hire full-time equivalent teachers is slightly less than shown in the chart. About 5% of OTPP retirees consist of inactive, part-time and supply teachers.
[2] F. McIntyre, "Teacher shortage looms" in *Professionally Speaking*, December 1998.

schools in every part of the province ... and ... almost every teaching specialty will be hit"[3].

In December 2000, the OCT released an updated forecast of teacher retirements.[4] The OCT now predicts that 46,000 of their members will retire from the profession from 2001 to 2005 -- an average of 9,200 per year. From 2006 to 2010, teacher retirements will average 6,400 each year.

These first two OCT forecasts focused on retirements from the profession by OCT members. The teacher retirement projections from the OTPP that appear later in this report are derived from a different database – active OTPP members employed by a publicly funded school board or other educational institution covered by the OTPP.

Some OCT members teach in those private schools not covered by the OTPP. Some are not currently active teachers. Some are former teachers retaining their OCT membership to keep open the option of returning to teaching. Others are B.Ed. graduates working in related fields –e.g., corporate training – who keep up their OCT membership as a professional credential. In addition, some teachers already receiving an OTPP pension keep their OCT membership in order to remain active in the profession by serving as supply teachers. These groups were included in the two OCT retirement forecasts based on information about the age of OCT members and assumptions about the probability of retirement from the profession as OCT members reach various age thresholds.

In order to focus on active teachers not receiving an OTPP retirement pension, the OCT also released a forecast of future retirements by those who were active

[3] OCT, "Teacher shortage coming all across Ontario, says College of Teachers", 20 Nov. 1998.
[4] F. McIntyre, "Exodus of retiring teachers will continue until 2010" in *Professionally Speaking*, December 2000.

members of both the OCT and OTPP at the end of 1999.[5] Active OCT/OTPP members at the end of 1999 were employed as teachers on either a full-time, part-time or supply basis. The OCT predicts that 32,401 of 140,366 active OCT/OTPP members in 1999[6] will retire over the six years from 2000 through 2005 – an annual average of 5,400. From 2006 to 2010, retirements by active OCT/OTPP members will average 4,717 per year.

The Province established the Minister's Task Force on Teacher Recruitment and Renewal. In May 1999, the Province announced an increase in funded student spaces in consecutive teacher education programs from 5,000 to 5,500 for the 1999/2000 school year. In June 2000, the Province announced two further 500-space installments for the next two school years along with a commitment to maintain 6,500 funded spaces per year through the 2003/4 school year.

Working Group members noted that an early indication from the Province on the number of funded student spaces for 2004/5 and beyond would help faculties of education with their own hiring decisions which also operate in a supply-demand context for quality educators. Longer term hiring decisions – tenure track positions especially – allow faculties to devote more time and resources to maximizing quality education for Ontario's pre-service teachers.

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[5] F. McIntyre, "Job applicants should look north or try Toronto" in *Professionally Speaking*, March 2001. In background note A, additional studies and surveys related to Ontario teacher supply and demand are summarized.

[6] New teachers in their first year during 1999 were not included in the database. As a result, the 1999 database of 140,366 teachers used for these retirement projections was less than the 152,659 actively contributing OTPP members at the end of 1999. The omission of first-year teachers would not affect the retirement projection, because very few first-year teachers in 1999 would be expected to retire by 2010. See background note B for a discussion of teacher statistics.

3. Methodological Approach

The framework for projecting teacher supply and demand adopted in this paper follows the model built by past researchers. Most recently, Frank McIntyre, now with the OCT and the OCT representative on this Working Group, and Laverne Smith reported in 1996 on *Ontario Teacher Supply and Demand* to the OADE.[7]

The basic approach consists of adding up the separate demand and supply components to project:

- total **demand** by publicly funded Ontario school boards to hire new full-time and part-time teachers on a full-time equivalent[8] (FTE) basis;
- total **supply** of new applicants for teaching positions offered by publicly funded Ontario school boards.

On the demand side, the component factors behind school board decisions to hire new teachers are:

- demand to hire new teachers to **replace retiring teachers**;
- demand to hire new teachers to **replace teachers leaving before retirement**;
- demand to hire new teachers to make up for a shortfall between teachers going on **parental leave** and teachers returning from parental leave;
- demand to hire **new teachers to keep up with enrolment growth**.[9]

On the supply side, the sources of new applicants for teaching positions are:

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[7] McIntyre and Smith in turn adapted the model developed by the Centre for Teacher Education, which was then part of the Ministry of Education.

[8] To calculate teacher demand on a FTE basis, demand to hire a part-time teacher – e.g., to replace a retiring part-time teacher – is treated as equal to demand to hire half a full-time teacher.

[9] Policy changes – e.g., smaller class size standards – can also affect school board demand to hire new teachers. A policy change component has not been built into the projection model because future policy changes cannot be forecast reliably. However, as soon as policy changes are announced, teacher demand projections would have to be adjusted accordingly.

- **new graduates** from Ontario teacher education faculties;
- **past Ontario graduates** who did not enter the profession when demand for new teachers was low – e.g., early 1990s – but would still like to teach;
- **teachers from out of province**;
- **experienced teachers who left** the Ontario system either for another profession or a teaching job in another jurisdiction, **but would like to return**.[10]

In this report, each component is projected from 2001/2 to 2009/10[11]:

[10] The projections are for the publicly funded system. However, the existence of private schools cannot be ignored. On the teacher supply side, an adjustment is factored in to account for that portion of new applicants who find jobs as private school teachers.

[11] The projection period ends at 2009/10 because the projection for teacher retirements – one of the most important components of demand to hire new teachers – does not extend beyond 2009. Readers should note that the accuracy of each component of the supply and demand projection diminishes the further out we attempt to look into the future. For example, the enrolment forecast for 2009/10 is likely to be less accurate than the enrolment forecast for 2001/2. Projected teacher demand and supply in 2009/10 are added up from several components and are likely to be even less accurate than the 2009/10 forecast for any individual component.

4. Two Supply and Demand Scenarios

The Working Group reached consensus on estimates of most components of teacher supply and demand. For these consensus estimates, reliable information is available.

In the case of some components, information gaps and/or year-to-year volatility mean that different projections are plausible. As a result, two scenarios are presented to reflect possible ranges for total supply and demand due to different projections for those components that are hard to predict. Scenarios A and B differ due to different projections entered for the following:

- demand to replace teachers leaving prior to retirement;
- demand to replace net annual losses due to teachers taking parental leaves;
- supply of experienced teachers returning to the Ontario system after previously leaving the profession and/or the province.

<u>Demand to Replace Teachers Leaving Before Retirement</u>

In Scenario A, the number of FTE teachers leaving the system is assumed to be 3,500 for each year of the projection period. The Scenario A projection is based on the assumption that FTE pre-retirement exits in future years will be more consistent with the relatively low number recorded in 1998 OTPP data than the relatively high number recorded in 1999.

In Scenario B, the number of FTE teachers leaving the system is assumed to be 4,000 for each year of the projection period. The Scenario B projection is based on the assumption that FTE pre-retirement exits in future years will be more consistent with the relatively high number recorded in 1999 than the relatively low number recorded in 1998. (For further details, see background note C.)

Demand to Replace Teachers Going on Parental Leaves

Similar problems of data uncertainty resulted in two projections being presented for demand to replace a net shortfall of teachers going on parental leave and teachers returning from leave. In scenario A, the annual demand to hire new teachers to make up for a net annual outflow of experienced teachers going on parental leave has been fixed at 250 over the first half of the projection period and at 100 over the last half of the projection period. This projection is consistent with:

- An average annual net flow of 266.7 as shown in the Educator Database over the past nine years; and
- The possibility that the number of young teachers going on parental leave may start to fall slightly as appears to have happened in the EDB data between 1999 and 2000, thereby leading eventually to a modest reduction in net outflows.

In scenario B, net outflows due to parental leaves will remain in a slightly higher range from 300 to 400 over the projection period. The presumption is that the full effect on parental leaves of younger teachers replacing retirees in recent years has not yet been felt. (For further details, see background note C.)

Supply of Experienced Teacher Re-entrants

In scenario A, former teachers returning to the system are assumed to number 2,000 for each year of the projection period. This is consistent with the number of former members reactivating their OTPP membership over 1997 through 1999, the most recent year for which OTPP membership data are available.

In scenario B, the estimate -- 1,200 -- is entered for each year of the projection period. This is consistent with the number of former OTPP members reactivating their membership over 1994 through 1996 and with indications from OCT data that the number of former Ontario teachers returning to the system declined sharply from 1999 to 2000.

Additional Caveats

Neither scenario attempts to quantify the number of additional teachers required to address the current deficit in available teachers represented by reported high demand for supply teachers, a temporary peak in pensioned teachers employed as supply teachers and non-teachers teaching under Letters of Permission.

In addition to the global supply and demand for teachers, there is an additional issue of the lack of an adequate match between subject, level and language of certification of available new teachers and the specific needs in various regions of the province. More supply is required to address these issues.

Summary of Scenario A

In scenario A, the annual supply of new teachers and annual school board demand to hire new teachers are expected to be close to balanced over the next two school years.

In 2003/4 and 2004/5, demand to hire FTE teachers is expected to fall below levels in previous years. The driving force behind the projected drop in teacher demand is the expected fall in elementary and secondary enrolment and a corresponding drop in the number of total FTE teachers required. As a result, in scenario A teacher supply is projected to exceed then-current demand by more than 1,000 in each of 2003/4 and 2004/5.

In 2005/6, the supply of new Ontario graduates returns to the 5,000 level in place prior to the May 1999 and June 2000 announcements of increased Provincial funding of teacher education student spaces. In scenario A, annual teacher supply falls back into approximate balance with annual demand in 2005/6 and 2006/7. In the final years of this decade, the annual number of teacher retirements is projected to fall below the 5,000+ levels recorded since 1998. As a result, by the end of the decade, teacher supply is projected to exceed demand by more than 1,000 each year in scenario A.

Summary of Scenario B

The outlook in scenario B is different. Annual teacher supply is projected to fall short of annual new demand by more than 1,000 in each of the next two years. Declining enrolment restores balance over 2003/4 and 2004/5. But, the shortfall nears 2,000 in 2005/6 as the supply of new teacher education graduates falls. The shortfall remains high and only gradually falls back toward balance by 2009/10.

Scenario A 26-Apr-01

Combined Elementary + Secondary

Demand to hire new FTE teachers

		School Years 2001/2	2002/3	2003/4	2004/5	2005/6	2006/7	2007/8	2008/9	2009/10	Data Source
Replacement Demand											
Replace retiring FTE teachers (a)											
OTPP actuarial consultants' projection		5,109	5,477	5,496	5,334	5,091	4,821	4,554	4,189	3,880	OTPP
+10% as recommended by OTPP	10%	511	548	550	533	509	482	455	419	388	OTPP
Replace pre-retirement FTE exits (b)		**3,500**	**3,500**	**3,500**	**3,500**	**3,500**	**3,500**	**3,500**	**3,500**	**3,500**	OTPP
Replace net loss due to parental leaves (c)		**250**	**250**	**250**	**250**	**100**	**100**	**100**	**100**	**100**	EDB
Replacement demand (d=a+b+c)		**9,370**	**9,775**	**9,796**	**9,617**	**9,200**	**8,903**	**8,609**	**8,208**	**7,868**	
System Adjustment Demand											
Enrolment effects (e)		1,053	213	-1,127	-790	-247	-330	-703	-782	-797	EDU
Total Demand (f=d+e)		**10,423**	**9,988**	**8,669**	**8,827**	**8,953**	**8,573**	**7,906**	**7,426**	**7,071**	
Supply of new teachers											
New Ontario graduates registering with OCT (g)		6,400	6,500	6,500	6,500	5,000	5,000	5,000	5,000	5,000	OCT/TCU
Past Ontario graduates start teaching for first time (h)		300	300	300	300	300	300	300	300	300	OCT
Teachers from out of province (i)		1,700	1,700	1,650	1,650	1,600	1,600	1,550	1,550	1,500	OCT
Experienced teacher re-entrants (j)		**2,000**	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**	**2000**	OTPP
less teachers to private school system (k)	3.2%	-333	-336	-334	-334	-285	-285	-283	-283	-282	EDU
Total Supply (l=g+h+i+j+k)		**10,067**	**10,164**	**10,116**	**10,116**	**8,615**	**8,615**	**8,567**	**8,567**	**8,518**	
Net Change (m=l-f)		**-356**	**176**	**1,447**	**1,288**	**-338**	**42**	**660**	**1,141**	**1,447**	

Notes:

Figures in bold represent projections that differ between scenarios A and B due to data problems, volatility, etc.

(a) The OTPP retirement projection is consistent with most recent published actuarial valuation as of 1 January 2000.
Projected retirements by full-time active members + retiring part-time active members set equal to 0.5 FTEs.
Retirement projection based on assumption that "85 factor" window would be extended.
This projection generated before recently announced reduction in eligibility age for reduced early retirement pension to age 50 from 55.
A new retirement projection was completed after the scenarios were finalized for this report.
The new retirement projection reflects an additional year of experience data and the new provision allowing early retirement at age 50 instead of 55.
Under the new projection there are slightly fewer retirements over full 9-year period than the scenario shown here,
with more retirements in the first few years -- e.g., over 500 more in 2001 -- offset by fewer retirements in the second half of decade.

(b) Estimate based on OTPP data on FTE membership suspensions, terminations + FTE value of shifts between FT, PT and supply teaching.
Assumption that future years will be more consistent with 1998 OTPP data showing lower number of FTE exits than 1999 data showing higher number of FTE exits.

(c) Estimate = Gap between teachers going on parental leave and teachers returning from parental leave based on preliminary Ministry of Education Educator Database figures.
Assumption that gap has not grown, will not grow and will eventually decline as proportion of teaching population in child-bearing years stabilizes.

(e) Education Finance Branch forecast growth multiplied by number of FTE teachers in publicly funded school boards for each preceding year. "Mid-range impact" secondary school reform scenario.

(g) Estimate of teacher education graduates from consecutive programs + grads from concurrent programs - grads who pursue careers outside teaching or outside Ontario.

(h) Teacher education graduates during low demand years of early to mid-1990s who never started teaching, but start teaching now that demand has improved
+ more recent grads who initially pursued other careers, but decide to start to teaching.

(i) Consistent with recent OCT data on new registrants with teaching degrees from outside Ontario - allowance for small decline due to increased recruiting competition from other provinces, US, UK, etc.

(j) Estimate based on 1997-99 OTPP data on former members returning to active contributor status.

(k) Estimated share of new teachers going to private school system. 3.2% share cited in L. Smith et al. *On Becoming a Teacher* (Ministry of Education, 1994).

(m) Annual positive net change = approximate measure of net increase in supply teaching pool.
If small negative net change actually occurs in 2001/2, school boards will likely be able to fill openings by promoting supply teachers.
Flows into and out of supply teaching pool significant but not shown here because they are volatile and difficult to predict.
OTPP data show 47% of new teachers in 1999 entered supply teaching pool and 42% of new FTE teachers regularly employed drawn from those previously in supply teaching ranks.

Sources:

OTPP = Ontario Teachers' Pension Plan
EDB = Educator Database of Ministry of Education
EDU = Ministry of Education
OCT = Ontario College of Teachers
TCU = Ministry of Training, Colleges and Universities

Scenario B 26-Apr-01

Combined Elementary + Secondary		**School Years**									
Demand to hire new FTE teachers		**2001/2**	**2002/3**	**2003/4**	**2004/5**	**2005/6**	**2006/7**	**2007/8**	**2008/9**	**2009/10**	**Data Source**
Replacement Demand											
Replace retiring FTE teachers (a)											
OTPP actuarial consultants' projection		5,109	5,477	5,496	5,334	5,091	4,821	4,554	4,189	3,880	OTPP
+10% as recommended by OTPP	10%	511	548	550	533	509	482	455	419	388	OTPP
Replace pre-retirement FTE exits (b)		**4,000**	**4,000**	**4,000**	**4,000**	**4,000**	**4,000**	**4,000**	**4,000**	**4,000**	OTPP
Replace net loss due to parental leaves (c)		**300**	**350**	**400**	**400**	**400**	**350**	**300**	**300**	**300**	OCT
Replacement demand (d=a+b+c)		**9,920**	**10,375**	**10,446**	**10,267**	**10,000**	**9,653**	**9,309**	**8,908**	**8,568**	
System Adjustment Demand											
Enrolment effects (e)		1,053	213	-1,127	-790	-247	-330	-703	-782	-797	EDU
Total Demand (f=e+d)		**10,973**	**10,588**	**9,319**	**9,477**	**9,753**	**9,323**	**8,606**	**8,126**	**7,771**	
Supply of new teachers											
New Ontario graduates registering with OCT (g)		6,400	6,500	6,500	6,500	5,000	5,000	5,000	5,000	5,000	OCT/TCU
Past Ontario graduates start teaching for first time (h)		300	300	300	300	300	300	300	300	300	OCT
Teachers from out of province (i)		1,700	1,700	1,650	1,650	1,600	1,600	1,550	1,550	1,500	OCT
Experienced teacher re-entrants (j)		**1,200**	**1,200**	**1,200**	**1,200**	**1,200**	**1,200**	**1,200**	**1,200**	**1,200**	OTPP/OCT
less teachers to private school system (k)	3.2%	-307	-310	-309	-309	-259	-259	-258	-258	-256	EDU
Total Supply (l=g+h+i+j+k)		**9,293**	**9,390**	**9,341**	**9,341**	**7,841**	**7,841**	**7,792**	**7,792**	**7,744**	
Net Change (m=l-f)		**-1,680**	**-1,198**	**23**	**-136**	**-1,912**	**-1,482**	**-814**	**-334**	**-27**	

Notes:

Figures in bold represent projections that differ between scenarios A and B due to data problems, volatility, etc.

(a) The OTPP retirement projection is consistent with most recent published actuarial valuation as of 1 January 2000.
Projected retirements by full-time active members + retiring part-time active members set equal to 0.5 FTEs.
Retirement projection based on assumption that "85 factor" window would be extended.
This projection generated before recently announced reduction in eligibility age for reduced early retirement pension to age 50 from 55.
A new retirement projection was completed after the scenarios were finalized for this report.
The new retirement projection reflects an additional year of experience data and the new provision allowing early retirement at age 50 instead of 55.
Under the new projection there are slightly fewer retirements over full 9-year period than the scenario shown here,
with more retirements in the first few years -- e.g., over 500 more in 2001 -- offset by fewer retirements in the second half of decade.

(b) Estimate based on OTPP data on FTE membership suspensions, terminations + FTE value of shifts between FT, PT and supply teaching.
Assumption that future years will be more consistent with 1999 OTPP data showing higher number of FTE exits than 1998 data showing lower number of FTE exits.

(c) Estimate = Gap between teachers going on parental leave and teachers returning from parental leave based on preliminary Ministry of Education Educator Database figures.
Assumption that gap has grown and will grow a bit wider before eventually declining as proportion of teaching population in child-bearing years stabilizes.

(e) Education Finance Branch forecast growth multiplied by number of FTE teachers in publicly funded school boards for each preceding year. "Mid-range impact" secondary school reform scenario.

(g) Estimate of teacher education graduates from consecutive programs + grads from concurrent programs - grads who pursue careers outside teaching or outside Ontario.

(h) Teacher education graduates during low demand years of early to mid-1990s who never started teaching, but start teaching now that demand has improved
+ more recent grads who initially pursued other careers, but decide to start to teaching.

(i) Consistent with recent OCT data on new registrants with teaching degrees from outside Ontario - allowance for small decline due to increased recruiting competition from other provinces, US, UK, etc.

(j) Estimate based on OTPP data on former members returning to active contributor status. Higher number of re-entrants in 1997-99 data may not continue.
Assumption that future years will be more consistent with 1996 OTPP data showing 1,238 former members returning to active contributor status.
OCT data show sharp drop from 1999 to 2000 in number of former teachers reactivating certificates. OTPP 2000 data not available until summer 2001.
OCT data on former teachers reactivating certificates and OTPP data on former members reactivating contributions can diverge if some teachers maintain OCT membership
when not actively teaching in Ontario and contributing to OTPP.

(k) Estimated share of new teachers going to private school system. 3.2% share cited in L. Smith et al. *On Becoming a Teacher* (Ministry of Education, 1994).

(m) School boards fill openings in negative net change years by promoting supply teachers. Flows in and out of supply teaching significant but not shown here because they are difficult to predict.
OTPP data show 47% of new teachers in 1999 entered supply teaching pool and 42% of new FTE teachers regularly employed drawn from those previously in supply teaching ranks.
In 1998, when demand for teachers was high due to change in OTPP retirement rules, supply teacher promotions accounted for just over half of new FTE teachers regularly employed.
Any future negative net changes likely to result in 1998 pattern -- large number of supply teachers promoted to full and part-time jobs resulting in decline in supply teaching pool.

Sources:

OTPP = Ontario Teachers' Pension Plan
EDB = Educator Database of Ministry of Education
EDU = Ministry of Education
TCU = Ministry of Training, Colleges and Universities
OCT = Ontario College of Teachers

Concerns Beyond 2009/10

Working Group members also noted the possibility of long-term supply problems not explicitly built into either scenario. The large cohort of teachers retiring during the 1990s and this decade represents the leading edge of the impact of the post-war "baby boom" generation on the labour market. At the present time, teachers hired to teach the "baby boomers" are retiring. Meanwhile, the first "baby boomers" -- those born in 1946 -- will turn 55 this year. Some are already considering early retirement.

If labour market conditions favour university graduates entering almost all professions, it may well become more and more difficult to attract applicants to teacher education faculties without intensive efforts to promote teaching as a profession. While this problem may not emerge in full force until the next decade, Working Group members urged all education sector stakeholders to prepare by taking appropriate measures to promote teaching as a profession and to retain teachers, vice-principals and principals now working.

Teacher supply and demand will also have to be monitored carefully over the coming years to guard against another possibility -- underemployment of new graduates. The supply of new teacher education graduates during the 1970s and early 1980s did not adjust enough as the "baby bust" succeeded the "baby boom". Student enrolment stopped growing during the 1970s and then declined gradually through the early 1980s.[12]

The current demographic outlook is very similar. As the "baby boom echo" effect behind recent increases in student enrolment gradually fades out, enrolment and

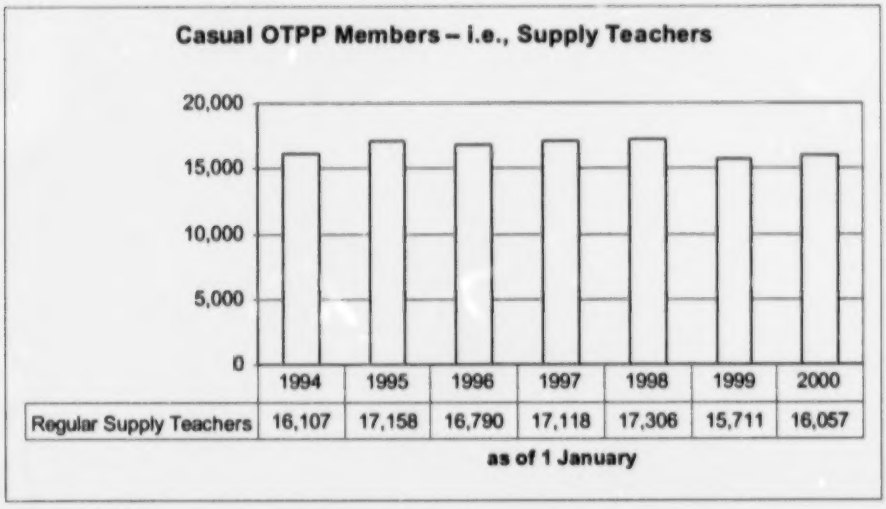
[12] For example, only 38% of 1983 teacher education graduates were employed full-time in publicly funded Ontario schools. As enrolment began growing again later in the 1980s, the full-time Ontario employment rate rose to 70% for 1988 teacher education graduates. Estimates cited in L. Smith et.al., *On Becoming A Teacher* (Ministry of Education, 1994). Comparable estimates for more recent years are not available.

demand to hire new teachers are expected to fall gradually after 2002/3. Teacher supply and demand projections must be continually updated so that the supply of funded teacher education spaces can be adjusted to respond to any emerging signs that new graduates are underemployed.

5. Supply Teachers

In 1998 – a year of unusually high demand for new teachers to replace more than 10,000 retirees – OTPP records show that almost 6,000 supply teachers moved to full- and part-time teaching jobs. The number of active casual OTPP members – i.e., supply teachers – fell by 9% from 17,306 on 1 January 1998 to 15,711 on 31 December.

Prior to the large 1998 movement of supply teachers into regular teaching jobs, the number of supply teacher OTPP members had remained relatively stable around 17,000 from 1 January 1995 to 1 January 1998.[13] The number of supply teachers rose during 1999 to 16,057 but remained 7% below the peak level achieved prior to the 1998 retirement wave.



Source: OTPP

[13] While the total number of supply teachers was relatively stable between 1995 and 1998, there is considerable turnover each year in the supply teaching pool. OTPP records show that 13% of the 15,711 supply teachers as of 1January 1999 left the profession during the following year. Over 30% moved up to full- or part-time jobs. 1,483 full- and part-time teachers moving down to the supply teaching pool; 4,670 teachers new to the Ontario system; and 1,034 former Ontario teachers returning to the system replaced departing supply teachers. The increase in supply teachers by 346 during 1999 was the net result of a much larger number of entries to and exits from the supply teaching pool.

The decline in OTPP supply teacher members shown above was offset by the fact that newly retired teachers can supplement their OTPP pensions by serving as supply teachers for up to 95 days per year. However, in the fourth year after retirement, the annual limit falls to 20 days until the retiree reaches age 69, at which time no limit applies.

The surge in retirements since April 1998 has increased the number of retired teachers able to teach on a supply basis up to 95 days per year. However, the largest group retired at the end of the 1997/8 school year and is about to have their eligibility reduced from 95 to 20 days per year.

There is no data source for the number of retired teachers serving as supply teachers across the province.[14] However, the Toronto District School Board (TDSB) recently reported that retirees account for 15% of their elementary and secondary supply teaching rosters – 622 names out of a total of 4,165.[15]

In several surveys since 1998, school administrators have responded that they need more supply teachers. The Minister's Task Force on Teacher Recruitment and Renewal surveyed school boards in 1999. Boards across the province reported needing 9,000 more supply teachers.[16]

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[14] In the absence of data, one approach to estimating the number of OTPP retirees serving as supply teachers is to develop some plausible assumptions. Consider the following scenario: 25% of OTPP retirees serve as supply teachers in the first year following retirement; of this group, 20% stop supply teaching after one year, another 20% stop after two years and the remaining 60% withdraw from the supply teaching pool when their annual limit falls to 20 days from 95 after three years. In this scenario, the number of OTPP retirees available as supply teachers rose by 1,600 during 1998 – almost exactly offsetting the decline in supply teachers recorded in the OTPP data. However, there is anecdotal evidence that even those OTPP retirees willing to serve as supply teachers are less inclined to accept supply teaching offers than regular supply teachers who depend on these offers as their principal source of income.

[15] TDSB, "Teacher shortages", 7 March 2001. A review of the Ottawa Carleton Catholic School Board's supply teacher roster indicates that 14% appear to be retirees.

[16] The 9,000 increase in supply teachers desired by school boards in 1999 is not directly comparable to the OTPP count of about 16,000 supply teachers at that time. Some supply teachers register with more than one board. As a result, the sum of supply teaching pools for 72 publicly funded school boards would exceed the 16,000 head count of supply teachers in the OTPP data.

70% of principals and vice-principals surveyed by the Ontario Principals' Council (OPC) reported problems finding supply teachers in the fall of 2000. 22% reported using supply personnel lacking teaching certificates for up to 10 days under the emergency provisions of Regulation 298. In a recent OTF/CODE survey, only one of 14 canvassed boards reported that they never resorted to the emergency provisions of Regulation 298.

85% of those attending the December 2000 forum hosted by the Ministry of Education and Ontario Association of School Business Officials (OASBO) reported that their board was experiencing problems finding supply teachers and 56% reported that these problems had worsened over the past year.

In a March 2001 report, the Toronto District School Board (TDSB) estimated that, on an average school day, 15% of requests by schools for supply teachers go unfilled. In response, the TDSB has registered 800 emergency replacement personnel without teaching certificates to call upon on those days their roster of 2,711 elementary supply teachers and 1,454 secondary supply teachers is insufficient.

Based on school board reports, the Elementary Teachers' Federation of Ontario found that, on average, the use of elementary supply teachers was equivalent to 9.3% of the FTE teaching complement during the 1999/2000 school year. In some months, the use of supply of teachers amounts to as much as 13% or 14% of FTE teachers.

6. Subject-Specific Supply and Demand

EDU Survey of Unfilled Positions (1998)

Surveys show that the hardest positions to fill are those requiring special training to teach a particular subject. For example, school boards reported to the Ministry of Education that positions remained unfilled after the start of the 1998/9 school year in the following areas:

TABLE: Fall 1998 Survey of Unfilled Positions after Start of School Year	
Type of Teacher	**Unfilled Positions**
Elementary Schools:	
General assignment – English boards	244
French as 2nd language	126
Special Education	64
Music	22
General assignment – French boards	20
Total elementary	**476**
Secondary Schools:	
Technology Studies	75
Computer Science	59
Mathematics	43
Science	37
Total secondary	**214**

Source: Ministry of Education data cited by OCT in 20 November 1998 press release.

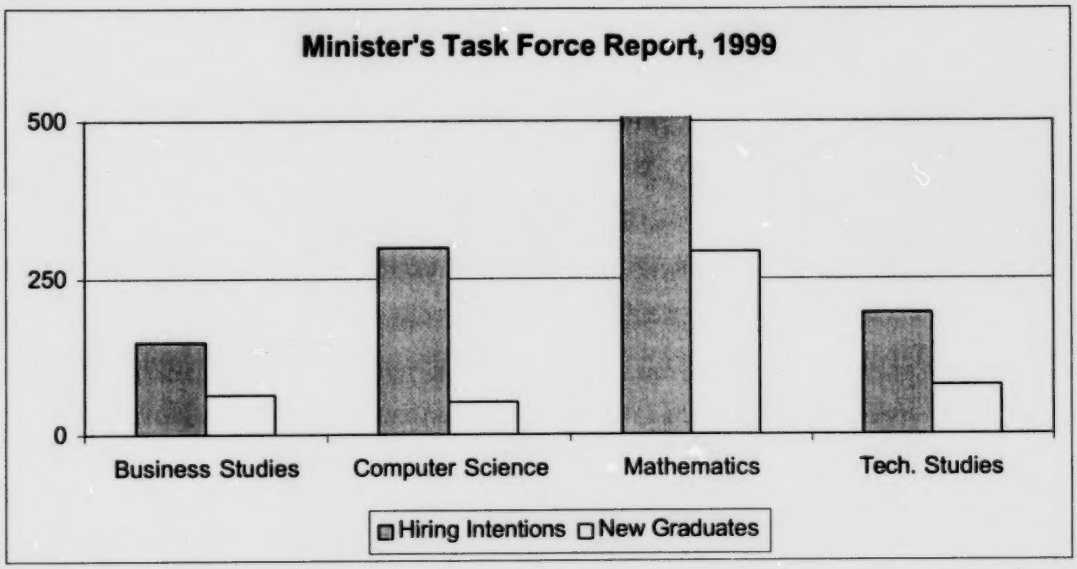
Canadian Teachers' Federation Survey (2000)

These 1998 findings were broadly confirmed by the October 2000 CTF survey. 62% of Ontario school boards reported shortages of computer science and technological studies teachers. 51% reported shortages of science teachers. 49% reported shortages of French and English as Second Language teachers.

Minister's Task Force (1999)

The Minister's Task Force surveyed school boards on their hiring intentions for the school year starting in September 1999 and teacher education faculties on spring 1999 graduates. A comparison of the two surveys showed that the number of Intermediate/Senior (I/S) graduates -- i.e., qualified to teach grades 7-12 -- with specialist training in technological studies, mathematics, computer science and business studies fell well short of openings for secondary school teachers in those subject areas.[17]

[17] The gaps between 1999 hiring intentions and the subject areas of 1999 graduates were even greater than indicated in the chart. Intermediate/Senior (I/S) students choose two teaching subjects. Thus, not all 1999 math graduates would have been available for math openings. Some would have found jobs in their other teaching area. There would have been even fewer new graduates trained to teach business studies than indicated in the chart to the extent that some I/S students choose two teaching subjects that are both business-related. These concerns do not apply to Technological Studies, which is a separate program. Also note that the figures reported to the Minister's Task Force have been adjusted to reflect the fact that school boards representing 8% of the province-wide teaching complement did not respond to the hiring intentions survey and teaching subjects were not reported for 6% of I/S graduates. The presumption is that the missing records were broadly in line with reported hiring intentions and teaching subjects. Subject-specific gaps between school board hiring intentions and new graduates could be filled from other sources – teachers arriving from out of province, experienced teacher re-entrants and supply teachers. However, applicants qualified to teach subjects such as math, business, computer and technological studies are also likely to be few and far between from these other sources.



Secondary School Teaching Subjects

Another approach to identifying potential high demand for new graduates trained to teach specific subjects is to compare teaching subjects selected by I/S teacher education students and secondary school course enrolment data. In the following table, teaching subject selections by 1999 and 2001 I/S graduates are compared to credit courses being taken by 1999/2000 secondary school students in four subject areas – mathematics, business studies, computer science and technological studies.

Subject	1999/2000 Course Enrolment as % of Total Secondary Course Enrolment	Intermediate/Senior Teaching Subject Selections as a % of all I/S Subject Selections	
		1999 Graduates	2001 Graduates
Mathematics	14%	8%	8%
Business Studies	8%	2%	4%
Tech. Studies	7%	4%	6%
Computer Science	3%	1%	1%

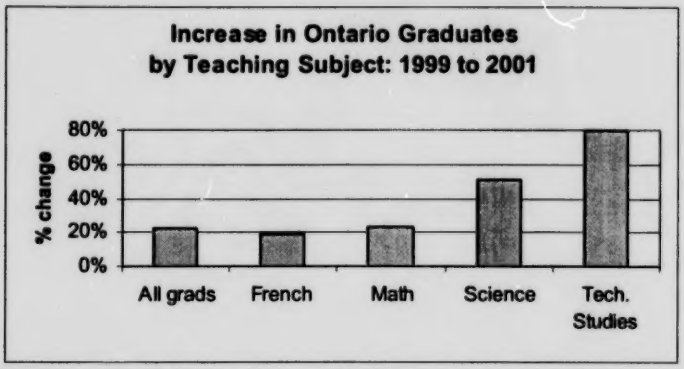
Sources: Ministry of Education Information Management Branch for secondary enrolment in publicly funded schools. Minister's Task Force for 1999 graduates and OTF survey of 10 teacher education faculties for 2001 graduates.
Notes: Technological Studies is a separate teacher education program. However, most technological studies graduates teach the same grades 7-12 as I/S graduates. For technological studies, the number of 1999 and 2001 graduates are shown as a % of I/S + technological studies graduates in those years. For the other three subjects, the number of I/S teaching subject selections are shown as a percentage of all I/S teaching subject selections.
Subject course enrolments as a % of total course enrolments are only a very approximate indicator of the % requirements for teachers trained to teach different subjects. Optimal class sizes may be different in different subjects.

Increase in Teacher Education Graduates: 1999 to 2001

When the Ministry of Education and Training announced an increase in funded consecutive teacher education student spaces in May 1999, education faculties were asked to give priority to:

- technological studies;
- science;
- mathematics; and
- French.

The chart below shows the percentage increases between 1999 and 2001 in teacher education graduates specializing in the four target subjects.



Sources: Minister's Task Force for 1999 graduates and OTF survey of 10 teacher education faculties for 2001 graduates.
Notes: French as First Language and French as Second Language specialists are shown in this chart, not all graduates from the two French-language programs.
"All grads" shows a comparison of all teacher education graduates including Primary/Junior (P/J) graduates training to teach Kindergarten to grade 6. The comparisons for the four target subjects are for Junior/Intermediate (grades 4-10) and Intermediate/Senior (grades 7-12) graduates. P/J students do not select a teaching subject. J/I students select one and I/S students select two. The percentage increase in science graduates is based on the assumption that the proportion of I/S students choosing two science subjects remained the same between 1999 and 2001.

80% growth from 1999 to 2001 in graduates trained to teach technological studies partly reflects the very low base level of only 79 technological studies graduates in 1999.[18] The large percentage increase in technological studies graduates does not mean that the gap between demand and supply has been closed fully. If hiring intentions for September 2001 are similar to 1999 – see chart on page 24, 142 graduates will still fall short of 175-200 job openings.[19]

Similarly, high demand in specific areas such as physics and chemistry may still be a problem despite the increase in science teacher graduates.

[18] The number of J/I and I/S graduates training to teach mathematics actually rose by more in absolute terms from 1999 to 2001 than the number of technological studies graduates. Math graduates rose to 469 in 2001from 379 in 1999. The figures for French as First Language combined with French as Second Language graduates are 361 in 2001 and 304 in 1999. J/I and I/S graduates took a total of 1,201 science teaching subjects in 2001 compared to 798 in 1999. All 1999 figures are approximate after adjustment for the fact that subjects were not reported for 6% of 1999 graduates.

[19] Any gap between openings and new graduates could conceivably be filled by teachers arriving from out of province, supply teacher moving up to full-time jobs or former teachers returning to the profession. But, teachers qualified for technological studies are hard to find from any source.

Anecdotal evidence suggests market forces constrain the ability of education faculties to attract math, science, computer and French specialists. Job opportunities in other sectors have been especially plentiful in recent years for university graduates with degrees in mathematics, science and computer studies as well as for bilingual graduates with degrees in almost all fields. Thus, graduates with these backgrounds may have been less likely to apply to teacher education programs than was the case during periods of sluggish job growth such as the early 1990s.

French-Language Programs

Over the past two years, the number of graduates from English-language teacher education programs has increased by more in percentage terms than the number of graduates from Ontario's two French-language programs.

Percentage Change in Ontario Teacher Education Graduates: 1999 to 2001			
Program	**English-Language**	**French-Language**	**Total**
Primary/Junior	+12%	-5%	+10%
Junior/Intermediate	+35%	+15%	+34%
Intermediate/Senior	+36%	+29%	+36%
Total	+24%	+7%	+23%

Sources: Minister's Task Force survey of 10 Ontario education faculties for 1999 graduates and OTF survey of 10 Ontario education faculties for 2001 graduates.

Notes: P/J graduates are qualified to teach Junior Kindergarten to grade 6.
J/I graduates are qualified to teach grades 4-10.
I/S graduates are qualified to teach grades 7-12. In this table, technological studies graduates have been included with I/S graduates.

The data in the following table suggest that the ratio of applicants to admissions for the 2000/1 academic year was lower for French-language than for English-

language programs.[20] The number of applicants to consecutive programs for the upcoming 2001/2 academic year is down from the same time last year for both French- and English-language programs.[21] The decline in applicants to all English-language teacher education programs is greater in percentage terms than for all French-language programs. However, the number of applicants to 2001/2 French-language Junior/Intermediate programs qualifying to teach grades 4-10 is less than the number of 2000/1 graduates from these same programs. The number of applicants to 2001/2 French-language Intermediate/Senior programs qualifying to teach grades 7-12 is just above the number of 2000/1 graduates.

[20] As noted below the table, the data required for a direct comparison between applicants and admissions by program – P/J, J/I and I/S – and by language of instruction are not available. Nevertheless, the available applicant and graduate data do suggest that applicants per admission are greater for English-language and French-language programs. In addition to a scarcity of applicants relative to English-language programs, a further factor may also be constraining efforts to increase the number of French-language graduates. Of 6,778 applicants who accepted admission offers to consecutive programs for the 2000/1 academic year, 6,221 were actually enrolled in the autumn of 2000. Some admitted applicants decide against registering even after confirming their intention to do so, because they decide to pursue opportunities outside teaching. With French-language applicants relatively scarce to begin with, losses between the acceptance and registration stages make it even more difficult for French-language programs to reach enrolment targets. The director of the teacher education program at the University of Ottawa, the larger of Ontario's two French-language programs, recently reported that "we have 350 (French-language) spaces here in the faculty with only 290 students attending". See "Teacher applications drop despite excellent job opportunities", *Professionally Speaking* (March 2001).

[21] However, it should be noted that the number of 2000/1 applicants was the highest figure recorded since 1992/3. Applicants for the upcoming 2001/2 year represent the second highest number of applicants over the past seven years.

	2000/1 Applicants (as of 4/10/00)	2001/2 Applicants (as of 4/6/01)	% Change in Applicants	2000/1 Graduates
French-Language Programs				
Primary/Junior	344	361	+5%	222
Junior/Intermediate	119	81	-32%	84
Intermediate/Senior	210	145	-31%	126
Total French	673	587	-13%	432
English-Language Programs				
Primary/Junior	7,624	5,541	-27%	2,967
Junior/Intermediate	2,865	2,294	-20%	1,429
Intermediate/Senior	4,342	3,199	-26%	2,320
Total English	14,876	11,074	-26%	6,716

Sources: Ontario Universities' Application Centre for applicant data to consecutive programs and OTF survey of 10 Ontario education faculties for expected 2001 graduates from both consecutive and concurrent programs.

Notes: A breakdown of graduates between consecutive and concurrent programs is not available. In recent years, 700-1,000 teacher education students have graduated from concurrent programs each year. Direct comparisons between applicants to consecutive programs and graduates from both consecutive and concurrent programs cannot be made. Nevertheless, the data do suggest that the ratio of applicants to graduates is greater for English-language than French-language programs.

P/J students qualify to teach Junior Kindergarten to grade 6. In this table, early primary education, aboriginal teacher education (P/J), early childhood education, outdoor and exp. education (P/J), and French as Second Language (P/J) applicants are included in total P/J applicants.

J/I students qualify to teach grades 4-10.

I/S graduates qualify to teach grades 7-12. In this table, aboriginal teacher education (I/S), outdoor and exp. education (I/S), and technological studies applicants are included in total I/S graduates. Technological studies is a separate program, but most graduates teach I/S grades 7-12. Applicants to the Artist in the Community program – 40 this year and 45 last year – included in Total English, but not allocated between P/J and I/S.

7. Letters of Permission and Temporary Letters of Approval

Under paragraph 10, section 8 of the *Education Act*, the Minister of Education may grant a Letter of Permission authorizing a board to employ a person who does not have a teaching certificate to teach in an elementary or secondary school. The Minister must be satisfied that no qualified teacher has applied or is willing to accept the teaching position. A Letter of Permission is granted to a school board to enable a person to teach in a specific division or subject area and the permission is not to exceed one school year.

Ontario Regulation 183/97 ("Letters of Permission") outlines the application process. Boards apply to the appropriate district office of the Ministry of Education when they are unable to locate a teacher to fill a teaching position. The applications are received and processed by the Ministry throughout the year. Ontario Regulation 183/97 requires boards to comply with the following as part of an application:

- evidence that they have publicly advertised for the position at least 3 times;
- one ad must be in a daily newspaper having provincial circulation;
- one ad must have been placed within 30 days of the employment start date;
- 7 days must have passed since the date of the final ad;
- the director of education certifies that no teacher has applied or has accepted the position; and
- the request cannot exceed one year and does not extend beyond the end of a school year.

Persons hired under Letters of Permission may have subject-specific expertise but lack a teaching certificate. The table below shows Letters of Permission granted for school years going back to 1987/8.

School Year	Letters of Permission	As % of Full-time Educators
1987/8	891	1.0%
1988/9	986	0.9%
1989/90	1,434	1.3%
1990/1	2,034	1.8%
1991/2	1,331	1.1%
1992/3	69	0.1%
1993/4	363	0.3%
1994/5	267	0.2%
1995/6	Not available	
1996/7	Not available	
1997/8	85	0.1%
1998/9	230	0.2%
1999/2000	801	0.7%
2000/1	844 (through 28 February)	

Source: Ministry of Education

Notes: The data for teaching staff working under a Letter of Permission in the province prior to 1995 were obtained from the files of Ministry of Education's former Registrar Services Branch. For the school years 1987-1991, records only identified the total percentage of teaching staff working under a Letter of Permission. The figures for the number of Letters of Permission granted to school boards for 1987-91 have therefore been calculated by taking this percentage from the total number of teaching staff employed for those years. Some of the year-to-year changes in the data may reflect changes in collection and/or estimation methods.

Letters of Permission are shown as a % of full-time educators in publicly funded schools including principals and vice-principals. An estimate of full-time educators for 2000/1 is not yet available.

At both the elementary and secondary levels, teachers with valid OCT memberships also require specific qualifications to teach some "restricted assignment" subjects or types of classes. School boards can deploy teachers lacking the qualifications for a restricted assignment by obtaining a Temporary Letter of Approval (TLA) from the Ontario College of Teachers.[22] In the following table, restricted assignments are listed:

[22] The use of LoPs and TLAs by individual boards is affected by the supply of and demand for teachers with specific qualifications in that region. One factor is the availability of retired teachers qualified to teach high-demand subjects and willing and able to serve on a supply basis for up to 95 days per year. These teachers can be hired on long-term occasional contracts for one semester each year.

Panel	Restricted Assignments
Elementary	French as 2nd Language French as 1st Language English as 2nd Language Library Special Education Music Design and Technology Principal and Vice-Principal
Secondary **(Partial Restriction Assignments)**	Music Visual Arts Business Studies Guidance Family Studies Physical Education
Secondary **(Full Restriction Assignments)**	French as 2nd Language French as 1st Language English as 2nd Language Library Special Education Technological Studies Principal and Vice-Principal

In the following table, the recent rise in TLAs is documented along with a breakdown of TLAs by year and subject. The increasing use of TLAs is another indicator of the high demand for teachers qualified for specific subjects.

Temporary Letters of Approval	**School Year**			
Subject / Responsibility	**1997-98**	**1998-99**	**1999-2000**	**2000-01**
French as a Second Language	36	112	167	249
Vice-Principal	3	83	140	178
Principal	2	5	9	24
Special Education	26	27	135	195
Librarianship	6	16	59	46
Technological Studies	27	13	14	31
English as a Second Language	7	5	19	38
Business Studies	5	9	9	8
Other	21	38	40	33
Total	**133**	**308**	**592**	**802**

Source: OCT
Note: 2000-01 data as of March 28, 2001

Special Education is an Additional Qualification, which is earned after the completion of the pre-service teacher training program. The OCT reports a significant number of Special Education TLAs. Qualifying to teach Special Education or any other subject expands the employment choices available to a teacher. However, not all teachers with Special Education qualifications are teaching in this area, just as not all teachers qualified to teach mathematics are teaching mathematics. One issue is whether incentives can be provided to encourage more teachers qualified to teach high-demand subjects to choose assignments to teach those subjects.

When a school board cannot find enough teachers for restricted assignments either through Letters of Permission or Temporary Letters of Approval, the board may have to cancel plans to offer a subject at some schools. Working Group members expressed concerns about hearing more frequent reports of program cancellations, particularly at the secondary level, due to unavailability of teachers qualified for restricted assignments.

Another issue that deserves to be on the research agenda is the extent to which teachers are being deployed outside their subject specialties when assignments are not restricted. For example, it would be useful to develop data – perhaps by matching the Ministry of Education's Educator Database with the OCT registry – to find out how many secondary teachers are teaching mathematics without having qualified in this subject and whether there is any trend toward increasing use of out-of-subject deployments.

8. Recommendations

The terms of reference for the Working Group were focused on an examination of the model for forecasting teacher supply and demand. The Working Group recommends that the following steps be taken to improve the data necessary to project teacher supply and demand:

1) Research to improve estimates of new teacher supply and retention – e.g., OCT "Transition to (and First Five Years of) Teaching" study.

2) Research on the use of supply teachers and the profile of the occasional teacher pool.

3) Research to quantify or estimate additional teacher supply required to provide an appropriate match of candidates to positions by subjects or divisional qualifications, by geography, board type or language.

4) Ongoing refinements of the forecasting model with annual updating.

5) Further sharing of data among stakeholders.

6) Investigation into whether supply and demand issues are affecting the availability or delivery of programs, e.g., "week in the life of a school" study of a representative sample of selected schools focusing on:

   - Are programs being canceled because no qualified teacher is available?
   - Is daily delivery of programs affected by low availability of supply teachers?

Background Note A: Recent Studies and Surveys

Ontario Principals' Council Survey

In the fall of 2000, the Ontario Principals' Council released the following results from a representative survey of their members:

- 15% of elementary schools and 43% of secondary schools reported one or more unfilled contract teaching positions after the start of the school year.

- Two-thirds of elementary schools and three-quarters of secondary schools reported experiencing problems finding supply teachers.

- 18% of elementary schools and 28% of secondary schools reported using persons without teaching qualifications as supply teachers for up to 10 days under the emergency provisions of Regulation 298.

- 79% of elementary school respondents and 68% of secondary school respondents reported that their Board was experiencing problems finding applicants for jobs as principals and vice-principals.

Canadian Teachers' Federation Survey

In October 2000, the Canadian Teachers' Federation released the following survey results:

- 43% of Ontario school boards reported having a harder time attracting qualified candidates than was the case four years ago. This was below the Canadian average figure of 51%. Ontario ranked 8th among the 10 provinces

in terms of the percentage of school boards reporting more difficulty attracting qualified candidates.

- Two-thirds of Ontario school boards expected to face problems attracting qualified candidates over the next five years. Ontario ranked just below the Canadian average in this respect.

- 78% of Ontario school boards reported having problems finding enough supply teachers, just above the Canadian average of 76%. Ontario ranked 6th among the 10 provinces in terms of the percentage of school boards reporting difficulty finding enough supply teachers.

- Teacher shortages are particularly acute for French-language schools outside Quebec.[1]

Ontario Teachers' Federation/ Council of Ontario Directors of Education

The OTF and CODE collaborated to survey 14 school boards across the province in the autumn of 2000. The results can be summarized as follows:

- Half of the 14 boards reported unfilled positions after the start of the school year.

- 8 boards reported using Letters of Permission to hire teachers without teaching certificates.

- 8 boards reported using Temporary Letters of Approval to employ teachers without the proper qualifications for restricted assignments.

[1] The CTF survey was not large enough to allow for province by province breakdowns of the results for French-language schools outside Quebec.

- 12 boards reported problems finding enough supply teachers.

- Just one board clearly indicated never using the emergency provisions under Regulation 298 to employ as supply teachers persons without teaching certificates for up to 10 consecutive days.

Ontario Association of School Business Officials

At December 2000 OASBO forum, the Ministry of Education surveyed attendees on teacher shortage issues.

- 69% reported that their board had difficulty filling vacancies for contract positions in 2000/1.

- 85% reported that their board is having difficulty finding enough supply teachers.

- 57% reported that their board is having difficulty finding enough applicants for jobs as principals and vice-principals.

- When asked to identify the most serious staffing problem facing their board, 59% selected filling contract teaching positions, 14% chose filling principal and vice-principal openings, 12% opted for finding enough supply teachers, and 15% were uncertain.

Toronto District School Board

In March 2001, the TDSB reported "experiencing significant teacher shortages, which are impacting on our ability to staff our secondary and elementary schools as well as our ability to provide an adequate number of occasional teachers". Other highlights from the report include:

- During the year 2000 hiring cycle, the TDSB hired 1,500 elementary teachers after receiving 4,250 applications and interviewing 3,000 candidates.[2] 600 were added to the elementary occasional teacher roster.

- During 2000, the TDSB hired 752 secondary teachers after receiving 6,800 applications and interviewing 1,625 candidates.[3] 111 were added to the secondary occasional teacher roster until a cap was reached.

- On an average day, 900 to 1,000 occasional teachers are sent to TDSB schools.[4]

- 15% of requests for occasional teachers cannot be filled on an average day. In response, the TDSB has registered 800 emergency replacements without teaching certificates for use under the provisions of Regulation 298 when a supply teacher with a teaching certificate cannot be found.

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[2] 1,500 elementary hires during 2000 appear to have been up from 1,000 in 1999. The TDSB reports hiring 2,500 elementary teachers over the past two school years.
[3] 750 secondary hires during 2000 appear to have been up from 250 in 1999. The TDSB reports hiring 1,000 secondary teachers over the past two school years.
[4] 900 to 1,000 supply teachers per day are equivalent to 5-6% of the TDSB's complement of 16,928 FTE teachers reported for the 2000/1 Teacher Compensation Allocation. If 15% of supply teacher requirements cannot be filled on average, then the total daily requirement for supply teachers is as much as 7% of the FTE teaching complement. This estimate does not include teachers on long-term occasional contracts in the same school every day.

Background Note B: Methodology

How Many Teachers Are There?

One potential source of confusion in teacher supply and demand analysis is the issue of how many total teachers there are underlying the projections. Some teacher demand calculations are explicitly based on the total number of teachers in a base year – e.g., the effect of enrolment and/or policy changes on the demand to hire new teachers. The supply and demand estimates should be consistent in their impact on the total number of teachers underlying the calculations.

The supply and demand components projected in scenarios A and B are based on different data sources. For example, the projected effect of enrolment change on teacher demand is based on the total number of full-time equivalent (FTE) teachers reported by publicly funded school boards for the purpose of calculating their Teacher Compensation Allocation (TCA). The retirement projections are derived from a different data set – OTPP members.

Principals and vice-principals are not included as FTE teachers for TCA purposes except insofar as some principals and vice-principals spend part of their time as classroom teachers. Principals and vice-principals are OTPP members and are part of the OTPP retirement projections. However, this apparent inconsistency between the retirement projections used in this report and the TCA population of in-school teachers is not a problem.

Teacher Data

The purpose of this note is to explain the teacher data underlying the projections and address concerns about potential inconsistencies. The best starting point is a brief review of the different counts of total Ontario teachers. Depending on the database, the number of Ontario teachers for the 1998/9 school year ranged from 113,641 to 170,000.

The Ontario College of Teachers (OCT) reported the highest figure – just over 170,000. The OCT figure included all holders of a valid Ontario teaching certificate resident in Ontario.[1]

The Ontario Teachers Pension Plan (OTPP) provides another source of data on the number of teachers. In the OTPP *Report on the Actuarial Valuation for Funding Purposes*, 150,672 active contributors were recorded as of 31 December 1998 – 123,982 full-time members, 10,979 part-time members and 15,711 casual members (i.e., supply teachers).

The difference of almost 20,000 between the OCT and the OTPP counts consists of four groups:

- holders of valid Ontario teaching certificates not currently active in the profession but maintaining their OCT registration to keep open the option of returning to teaching;
- holders of valid Ontario teaching certificates active in related professions – e.g., corporate training – and maintaining their OCT registration as a professional credential;
- teachers who have already started their retirement pensions, but keep their certificates in order to serve on a supply basis, which they can do up to 95

days per year for the first three years after starting their OTPP retirement pension, up to 20 days thereafter or on an unlimited basis after age 69; and

- teachers in institutions not covered by the OTPP – e.g., some private schools.[2]

Based on Teaching Staff Reports submitted by publicly funded school boards, the Information Management Branch (IMB) of the Ministry of Education reported that there were 116,462 full-time, in-school teachers in autumn 1998 including 7,395 principals and vice-principals.[3] The OTPP and IMB counts of full-time teachers differ because the OTPP count includes the following cases not covered by the IMB count:

- teachers maintaining their OTPP contributions and membership while on employer-approved temporary leaves – e.g., parental leave; as well as

- small number of OTPP members who teach outside the publicly funded system – e.g., designated private schools and organizations.[4]

School boards also submit teacher staffing reports to the Ministry's Transfer Payments and Financial Reporting Branch for the purpose of calculating the qualifications and experience adjustment portion of the Teacher Compensation

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[1] The OCT reported 172,507 total members for 1998 – 2,342 of whom were living outside of Ontario. Total OCT membership increased to 174,470 in 1999 – 2,931 of whom were outside Ontario. See OCT *Annual Reports*.

[2] About 1,500 active OTPP members at the end of 1999 were employed by private schools covered by the OTPP. Ministry of Education Information Management Branch data shows 7,412 full-time staff and 1,974 part-time staff in Ontario private schools in 1999/2000. However, not all private school teachers would be OCT members.

[3] See Ontario Ministry of Education, *Quick Facts Ontario Schools 1998-99*, Full-Time Teachers in Schools, 1998-99.

[4] In addition to the 1,500 active OTPP members at the end of 1999 employed by private schools, about 550 were employed by organizations such as the OTF and affiliates and some federally funded First Nation schools. Most, but not all, active OTPP members in designated private schools and organizations would be employed full-time.

Allocation (TCA) – a component of Student-Focused Funding. Boards reported 113,632 in-school teachers on a full-time equivalent (FTE) basis for 1998/99.[5]

The TCA and IMB counts differ in the following respects:

- TCA count includes part-time teachers on a FTE basis;
- TCA count excludes principals and vice-principals except for the FTE component of time spent teaching – 578 FTEs in 1998/9; and
- TCA count excludes a small number – less than 1,000 FTEs – of teachers in school authority boards funded too small to be covered by the TCA formula.

[5] Actuals Approved data except Estimates Approved in the case of the one school board that has not yet submitted Actual data for 1998/9.

In table B1, the different teacher estimates are summarised:

TABLE B1: Estimates of Ontario Teachers, 1998			
Source	**Estimate**	**Date in 1998:**	**Includes:**
Ontario College of Teachers	170,165 holders of valid teaching certificates living in Ontario	December	Head count of all those holding a valid certificate to teach in Ontario including principals, vice-principals, supervisory officers, supply teachers, teachers in independent schools and those not currently teaching but maintaining their certificates and membership in the profession.
Ontario Teachers Pension Plan	150,672 active members	31 December	Head count of all active contributors including principals, vice-principals, teachers on leave but maintaining their contributions, 15,711 supply teachers,10,979 part-time teachers, about 1,500 in private schools, 550 in designated organizations – OCT, OTF and affiliates + 300 in school authority boards.
Ministry of Education Information Management Branch based on reports from school boards	116,462 full-time educators in schools	31 October	100,076 teachers including those on long-term occasional contracts + 8,991 department heads + 7,395 principals and vice-principals employed in schools full-time by publicly funded school boards.
Ministry of Education Transfer Payments and Financial Reporting Branch based on board reports	113,632 FTEs = Codepoints 797 + 890	31 October	In-school teachers employed by publicly funded school boards reported for TCA purposes = full-time + FTE part-time. No principals and vice-principals save for 578 FTEs of teaching time. No occasional contracts.

Rationale for Using TCA Count

For this project, the TCA count has been used as the basis for teacher supply and demand estimates. There are two advantages to using the TCA count:

1) The TCA count is the most up to date. No other source provides estimates for the current 2000/1 school year. The most recent TCA estimates are shown in the following table.

Table B2: FTE Teachers Reported by Ontario Publicly Funded School Boards

School Year	Elementary	Secondary	Total
1998/99	71,841	41,791	113,632
1999/2000	72,242	42,895	115,137
2000/01	73,538	42,969	116,507

Source: Ministry of Education Codepoints

2) The FTE basis of the TCA count is the most appropriate for planning purposes. Part-time teachers are an important part of the teaching complement and should be included in any count. A simple head count would exaggerate the contribution of part-time teachers to total teaching time. Converting part-time teachers to FTEs captures the contribution of part-time teachers.

Principals and Vice-Principals

Principals and vice-principals are not part of the TCA data unless they spend part of their time teaching. The use of the TCA data in this project does not mean that principals and vice-principals are not important. However, for some demand calculations, principals and vice-principals can be omitted. For example, the calculation of the enrolment effect on teacher demand is not affected by the omission of principals and vice-principals from the TCA data. Year-to-year

changes in enrolment are not large enough to change the number of schools required and the number of principals and vice-principals.[6]

As explained in background note C, principals and vice-principals are included in the retirement projections.[7] However, including retiring principals and vice-principals is not conceptually inconsistent with excluding them from the TCA count of FTE teachers underlying the teacher demand and supply projections. Retirements by principals and vice-principals set in motion a chain of promotions ultimately affecting the demand to hire new classroom teachers.

[6] With elementary enrolment projected to fall steadily from the peak in 2002/3 to the end of the forecast period in 2009/10, enrolment change might have some effect on the number of elementary schools over the medium term. However, the effect on the number of principals and vice-principals required would not likely be significant relative to other demand components. Omitting this factor would not materially affect the overall supply and demand projection.

[7] Some principals and vice-principals are likely included in the OTPP data on pre-retirement exits as well. However, their inclusion is appropriate for the same reason that including retiring principals and vice-principals is appropriate. A principal or vice-principal who leaves the publicly funded system before retirement – e.g., for an executive position in a private firm providing goods or services to the education sector – sets in motion a chain of promotions leading to demand to hire a new classroom teacher.

*What this Supply and Demand Framework Does **Not** Do*

Supply Teachers

The simple supply and demand framework presented in this report does not capture the full complexity of the labour market for teachers. Not all new applicants for teaching jobs find full- or part-time positions right away. Many new teacher education graduates and new teachers arriving from out of province start out as supply teachers. OTPP data show that, in both 1998 and 1999, 47% of new members[8] entered the Ontario system as occasional members – i.e., supply teachers.

Similarly, not all new full- and part-time jobs go to new graduates, new arrivals from out of province and former teachers returning to the system. A significant number of new jobs go to supply teachers moving to regular positions as full- and part-time teachers. For example, in 1998 – a year of unusually high demand for new teachers to replace more than 10,000 retirees – almost 6,000 supply teachers moved to full- and part-time positions. Supply teachers moving to full- and part-time jobs received about half of new FTE regular teaching positions.

In a comprehensive forecasting model of the labour market for teachers, researchers would build in projections of flows back and forth between the supply teaching pool and teachers employed in regular full- and part-time positions and of exits from the profession by supply teachers. A more complete model of the teacher labour market will be placed on the agenda of possible long-term projects on teacher supply and demand.

[8] New OTPP members include all those who start or restart teaching jobs – including supply teaching jobs -- with employers covered by the OTPP. Thus, new members include new graduates from Ontario teacher education faculties, past graduates starting teaching for the first time, teachers arriving from out of province and some former teachers who terminated their membership when they stopped teaching and have now rejoined the profession.

Nevertheless, it should be noted that school board demand to hire new FTE teachers and the supply of new applicants cannot be directly compared without keeping in mind the missing links of flows in and out of the supply teaching pool. A projected shortfall in the supply of new applicants relative to the demand to hire FTE teachers is an indicator of "tight" labour market conditions. A projected shortfall does not indicate that school boards will be unable to fill vacancies. Supply teachers have always filled some openings for regular positions. However, a projected shortfall in the supply of new applicants relative to the demand to hire FTE teachers does indicate that there may well be a decline in the number of supply teachers on a province-wide basis.

Similarly, a projected surplus in the supply of new applicants relative to the demand to hire FTE teachers does not mean that all school boards will be able to fill all vacancies. Boards may still have problems finding enough applicants qualified to fill positions for which specific training is required. And, boards in some regions may have problems attracting enough applicants. A projected excess in the supply of new applicants relative to the demand to hire FTE teachers indicates that there may be an increase in the supply teaching pool.[9]

Job Market for Teachers and the Broader Job Market

The job market for Ontario teachers is part of the broader provincial job market. Overall job market conditions can have powerful effects on both supply and demand for teachers. When job vacancies are plentiful in the wider economy, more experienced teachers are likely to leave the profession for other careers – particularly teachers with qualifications in high demand such as mathematics and computer science. Similarly, fewer former teachers return to the profession when

[9] Of course, no definitive prediction can be made even about the change in the supply teaching pool without a forecast for how many supply teachers will be leaving the profession each year. OTPP records show that 159 supply teachers retired in 1999 and another 1,908 lost their active membership status when employment stopped.

jobs are widely available in the rest of the economy. The supply of applicants to teacher education faculties is affected by similar considerations.

Forecasting the future course of the Ontario economy is outside the mandate of the Working Group. The projections in scenarios A and B do not incorporate the potential effects of market forces on teacher demand and supply.

Nevertheless, as teacher supply and demand data are updated each year, market forces will have to be considered as a possible explanation of some year-to-year changes. Identifying and quantifying the links between the supply and demand for Ontario teachers and the broader provincial labour market should be listed for consideration as a future research topic.

Background Note C: Components Underlying Teacher Demand

Five factors influence school board decisions to seek new teachers:

1) the need to replace teachers who retired during or at the end of the previous school year;

2) the need to replace teachers who left the profession during or at the end of the previous school year for reasons other than retirement – death, disability, to pursue another career or to teach in another province or country;

3) the need to replace a net loss of teachers due to an excess of teachers going on parental leave over teachers returning from parental leaves;

4) the need to adjust the teaching complement for enrolment change;

5) the need to adjust the teaching complement for policy changes – e.g., smaller class size standards.

The first three factors can be grouped together under the broad heading – replacement demand. The last two factors can be grouped together under the broad heading – system adjustment demand.

The sources of data and methodological assumptions underlying the demand estimates presented in the summary table are outlined below.

Teacher Retirements

Replacing retirees with new hires accounts for a significant degree of turnover among Ontario teachers. About 5,600 FTE retirements in 1999/2000 amounted to just under 5% of the total complement of just over 115,000 FTE in-school

teachers employed by publicly funded Ontario school boards.[1] In table C1, future demand to replace retirements is shown based on a recent projection by the actuarial consultants to the OTPP Board.

TABLE C1: Projected Demand to Hire New Teachers to Replace Retirees				
Projected retirements in school year:	**Generate demand to hire new teachers in next school year:**	**Actuarial Projection of OTPP Retirees** (FTE basis)	**+ 10% Boost Suggested by OTPP**	**FTE retirements to be replaced by new hires**
2000/1	2001/2	5,109	+ 511	5,620
2001/2	2002/3	5,477	+ 548	6,025
2002/3	2003/4	5,496	+ 550	6,046
2003/4	2004/5	5,334	+ 533	5,867
2004/5	2005/6	5,091	+ 509	5,600
2005/6	2006/7	4,821	+ 482	5,303
2006/7	2007/8	4,554	+ 455	5,009
2007/8	2008/9	4,189	+ 419	4,608
2008/9	2009/10	3,880	+ 388	4,268

Source: OTPP

Notes: Figures for 2001/2 to 2005/6 retirements based on OTPP actuarial projection with supply and inactive teachers excluded. Part-time teachers treated as 0.5 FTEs.
OTPP forecasts on a calendar year basis. In any calendar year, about 7/8 of all retirements occur over the 8 months from January to August. Thus, it is reasonable to assume that retirements for the 2001 calendar year are a close approximation of retirements for the 2000/1 school year from September 2000 to August 2001 and so on.
The OTPP retirement projections were the latest available at the time that this report was prepared. The projections shown here do not include the impact of the recently announced reduction in the eligibility age for a reduced early retirement pension to age 50 from 55. An updated OTPP retirement projection incorporating the expected impact of the early retirement change and of an additional year of experience data is in the process of being finalized.

[1] This report is focused on supply and demand for in-school teachers in publicly funded school boards. However, retiring principals, vice-principals and board administrators are OTPP members and are included in the OTPP retirement data. Nevertheless, including retiring principals, vice-principals and board administrators in the estimates of demand for new teachers to replace retirees is appropriate. When a principal, vice-principal or board administrator retires, there is no immediate change in the number of in-school teachers. However, the likely outcome is a chain of promotions resulting in the loss of an experienced classroom teacher and the need to hire a new teacher. In addition, some retirees teach in private schools, school authority boards and other designated organizations covered by the OTPP. Of 152,659 active OTPP members at the end of 1999, about 1,500 worked for private schools, 300 for school authority boards and 550 for designated organizations such as the OCT, OTF and affiliates as well as special provincial schools and some federally-funded First Nation schools. See background note B for further discussion of the methodological issues arising from using different data on the total population of teachers.

Exits before Retirement

During or at the end of each school year, some experienced teachers leave Ontario's publicly funded system for reasons other than retirement:

- death;
- illness or disability;
- move to another province or country;
- move to the private school system;
- move to a new job outside teaching;
- temporary leave.

Educator Database

Ideally, projections of pre-retirement exits could be based on recent data from the Ministry of Education's Educator Database (EDB). The EDB is based on Teaching Staff reports filled out by schools each September. Staff members from the previous year who are no longer at the school are to be recorded as withdrawn and assigned a code showing the reason for leaving.

A preliminary review of EDB figures on teacher withdrawals suggests that it may not be possible to separate pre-retirement teacher exits from retirements in this data source. Thus, until progress can be made on data issues, the EDB is not available as a source for estimating and projecting pre-retirement exits.

Ontario Teachers' Pension Plan Data

The OTPP provides an alternative source of data on pre-retirement exits. The OTPP keeps track of annual flows of members from active – i.e., currently contributing to the plan – to non-retired, inactive status – i.e., still a plan member with an entitlement to future benefits, but no longer employed as an Ontario teacher and no longer making contributions.

In addition, the OTPP reports on the number of active memberships terminated when teaching and contributions stop before retirement. This happens when:

- a member has contributed for less than the two-year minimum period required for a plan member to acquire a vested right to future pension benefits[2]; or
- a member moves to another province and transfers their OTPP credits to their new province's teachers' pension plan;[3] or
- a member leaves teaching and transfers the commuted value of OTPP credits to a locked-in retirement account (LIRA).

The OTPP also records the number of active contributing members who die prior to retirement. In table C2, OTPP data for the 1994 to 1999 calendar years are presented.

[2] In these cases, the terminating member receives a refund of employee contributions.
[3] The OTPP currently has portability or reciprocal transfer agreements with teacher's plans in Manitoba and Saskatchewan. Negotiations with plans in other provinces are under way. Agreements may be completed later this year. Thus, the relatively low numbers in this category do not necessarily mean that few Ontario teachers move to other provinces. The OTPP also has reciprocal transfer agreements with other Ontario public sector pension plans.

TABLE C2: OTPP Membership Data on Pre-Retirement Teacher Exits				
Calendar Year	**Membership Suspended** (A)	**Membership Terminated** (B)	**Died** (C)	**Total Exits** (D =A+B+C)
1994	3,592	495	194	**4,281**
1995	3,146	318	205	**3,669**
1996	3,596	315	178	**4,089**
1997	3,521	393	47	**3,961**
1998	3,590	571	167	**4,328**
1999	4,049	499	287	**4,835**

Source: William M. Mercer Ltd., *Valuation of the OTPP*, Appendix C, (six most recent years).

The head count OTPP data in the above table do not provide an estimate of teacher exits prior to retirement on a FTE basis. Supply teachers accounted for 1,708 pre-retirement exits in 1998 and for 1,916 in 1999. Part-time teachers accounted for several hundred more in each year. However, the OTPP data broken down between full-time, part-time and supply teachers and including the number of teachers who changed status among the three membership categories can be used to calculate FTE pre-retirement exits as follows.

Table C3: OTPP Data on Pre-Retirement Teacher Exits			
1998			
	Full-time (FT) Member Exits	**Part-time (PT)** (FTE value)	**FTE Exits**
OTPP members terminated	-410	-56*0.5 = -28	-438
Active members to inactive	-1,394	-602*0.5= -301	-1,695
Deaths	-152	-6*0.5 = -3	-155
FT to PT	-1,787*0.5 = -894		
PT to FT		+3,667*0.5= +1,834	
Net effect of FT/PT shifts on FTE members			+940
FT and PT to supply teaching	-559	-557*0.5= -229	-838
Total	**-3,409**	**+1,273**	**-2,186**

1999 OTPP Data on Pre-Retirement Teacher Exits			
	Full-time (FT) Member Exits	**Part-time (PT)** (FTE value)	**FTE Exits**
OTPP members terminated	-278	-60*0.5 = -30	-308
Active members to inactive	-1,685	-639*0.5 = -320	-2,005
Deaths	-247	-18*0.5 = -9	-256
FT to PT	-3,781*0.5 = -1,891		
PT to FT		+2,844*0.5 = +1,422	
Net effect of FT/PT shifts on FTE members			-469
FT and PT to supply teaching	-790	-693*0.5 = -347	-1,137
Total	**-4,891**	**+717**	**-4,174**

Source: OTPP

The OTPP data show that exits from the system before retirement generated demand for 2,186 FTE teachers in 1998 and for 4,174 teachers in 1999.

Disability

The number forced to withdraw from teaching each year due to illness or disability is one component of non-retirement exits that is not included in the OTPP data.[4] The Ontario Teachers' Insurance Plan (OTIP) was established by affiliated teachers' federations in 1975 to provide their members with long-term disability coverage. OTIP covers approximately 80,000 Ontario teachers. OTIP records show 15 new disability cases for every 1,000 members in 2000 -- or about 1,200 new cases out of 80,000 members. OTIP records show that benefits last for 33 months on average. However, the data do not reveal what percentage

[4] The actuarial assumptions for the proportion of teachers starting OTPP disability benefits each year range from 0.003% for 30-year-old teachers to 0.213% for 55-year-old teachers. However, according to the William M. Mercer Limited actuarial consultants, "very few teachers make use of this plan provision ... most disabled members claim benefits under a Long Term Disability Income Plan rather than taking a disability pension under the pension plan". (page B-13 of *OTPP Report on the Actuarial Valuation for Funding Purposes*)

of cases are closed when beneficiaries return to work and what percentage are closed when older disability beneficiaries move off OTIP benefits and start drawing their OTPP retirement pensions. Without information on how many disability recipients return to work each year, it is not possible to estimate the precise impact of disability on the demand to hire new teachers to replace pre-retirement exits.

Pre-Retirement Exits: Two Scenarios

Given the year-to-year volatility in the OTPP data on pre-retirement exits and the uncertainty surrounding the OTIP disability data, Working Group members agreed that two scenarios should be presented.

In Scenario A, the number of FTE teachers leaving the system is assumed to be 3,500 for each year of the projection period. The Scenario A projection is based on the assumption that FTE pre-retirement exits in future years will be more consistent with the relatively low number recorded in 1998 OTPP data than the relatively high number recorded in 1999.

In Scenario B, the number of FTE teachers leaving the system is assumed to be 4,000 for each year of the projection period. The Scenario B projection is based on the assumption that FTE pre-retirement exits in future years will be more consistent with the relatively high number recorded in 1999 than the relatively low number recorded in 1998.

Parental Leaves

Previous researchers included the need to replace teachers who take parental leaves as a demand component and incorporated teachers returning from leaves

as a source of supply. However, teachers returning from parental leave differ from other sources of teacher supply. Teachers returning from parental leave generally do not compete for openings. There is little or no risk that a teacher returning from parental leave will end up with no job to return to.

One alternative approach is to treat the net difference between teachers going on parental leave and teachers returning from leave as generating a demand to hire new teachers.

Flows on and off leaves cannot be estimated from the OTPP data. Teachers can maintain their OTPP contributions while on employer-approved leaves.

Fortunately, the EDB can be used as a data source in this particular case. It is unlikely that retiring teachers have been inadvertently mixed in with teachers coded as going on parental leave in the EDB. In table C4 below, preliminary EDB figures appear on the number of teachers going on parental leave and returning from parental leave for each school year from 1992/93 to 2000/1.

Table C4: Parental Leaves

EDB Date	Going On Leave	Returning	Net Flows	% who returned next year	% not back by Fall 2000
Fall 1992	1,136	1,042	94	85%	7%
Fall 1993	1,235	1,023	212	85%	7%
Fall 1994	1,374	1,140	234	85%	8%
Fall 1995	1,376	1,264	112	81%	10%
Fall 1996	1,563	1,221	342	81%	10%
Fall 1997	1,577	1,360	217	80%	13%
Fall 1998	1,723	1,407	316	72%	20%
Fall 1999	2,012	1,343	669	74%	26%
Fall 2000	1,891	1,687	204	n.a.	n.a.

Source: Ministry of Education Educator Database

Note: Above numbers are head counts not FTEs. FTE conversion would not likely affect the net flows significantly.

"% not back by Fall 2000" better indicator of "% who never return" for earliest groups of leave-takers. Of those who started parental leaves in recent years and have not yet returned to teaching, some may still come back in future years.

The data indicate that 5-10% of teachers, who go on parental leave, never return. As a result, the net flow of teachers going on parental leave each year less those returning from leave can be expected to be slightly positive, even if the number of teachers going on leave remained stable from year to year.

Parental Leaves: Two Scenarios

Different scenarios are plausible for the future impact of parental leaves on the demand for new teachers. In scenario A, the annual demand to hire new teachers to make up for a net outflow of experienced teachers going on parental leave has been fixed at 250 over the first half of the projection period. An assumption of 250 is consistent with the 266.7 average net flow over the past nine years and the fact that there is no consistent time trend. The projected net flow is reduced to 100 per year over the last half of the projection period. In scenario A, total demand for new teachers is projected to fall over the decade. With fewer new teachers entering the system each year, the number of young teachers going on parental may start to fall slightly as appears to have happened in the EDB data between 1999 and 2000. This could eventually reduce net flows due to parental leaves below current levels.

In scenario B, the presumption is that net outflows due to parental leaves will remain in a slightly higher range from 300 to 400 over the projection period. The Ontario teaching complement has become a bit younger over the past few years as new teachers have replaced retirements from the large cohort of teachers hired in the 1960s. For example, during 1998, the year that the change in OTPP retirement rules opened up a large number of teaching jobs, full-time teachers under 35, the age group most likely to have additional children, increased from 23,858 to 27,145 or by nearly 14%. As more young people enter the teaching force, a consistent upward trend in net parental leave flows may develop.

Enrolment-Related Demand Effects

School board demand to hire teachers is also affected by enrolment change. The standard assumption is that enrolment change leads to a proportional change in the total number of teachers required by a school board.[5] In table C5, the projected impact of enrolment on the demand for Ontario teachers is shown.

TABLE C5: Enrolment Impact on Demand for New Teachers			
School Year			**Actual FTE Teachers**
2000/1			116,507
	Projected Enrolment Change	**Projected Change in FTEs**	**Projected FTEs**
2001/2	+0.9%	+1,053	117,560
2002/3	+0.2%	+213	117,773
2003/4	-0.9%	-1,127	116,646
2004/5	-0.7%	-790	115,856
2005/6	-0.3%	-247	115,609
2006/7	-0.4%	-330	115,279
2007/8	-0.7%	-703	114,576
2008/9	-0.7%	-782	113,794
2009/10	-0.8%	-797	112,997

Notes: Education Finance Branch (EFB) enrolment projection as of February 2001 including impact of secondary school reform. Annual enrolment changes applied to number of FTE teachers reported by 72 publicly funded school boards for Teacher Compensation Allocation (TCA) purposes – i.e., principals and vice-principals excluded except for time spent teaching. Principals and vice-principals excluded because small changes in enrolment are not expected to affect the number of schools from one year to the next. Teachers employed by the 37 publicly funded school authorities are not included in this projection. School authorities are funded separately and are not covered by the TCA. However, school authorities account for less than 1,000 teachers in total. Most school authorities are so small that enrolment changes would have to be very significant to have an impact on their teaching complements. The fact that school authorities are not covered by the enrolment component of the demand projection does not skew the results.

The teacher demand projections shown above in table C5 are based on the current enrolment forecast. As the enrolment forecast is updated, the above projections would change accordingly.

[5] In other words, the assumption is that school boards hold the pupil/teacher ratio constant when responding to enrolment change. Policy-mandated reductions in class sizes can raise the demand to hire new teachers, but as noted in the next section these impacts cannot be built into demand projections until changes are under consideration.

Policy Changes

Future policy changes – e.g., smaller class size standards – cannot be predicted in advance. The impact of future policy changes would have to be built into teacher demand projections as policy decisions are considered.

Background Note D: Sources of Teacher Supply

School boards draw upon six sources of applicants to fill teaching openings:

1) new graduates from Ontario teacher education programs;

2) past Ontario graduates who were unable to start their careers because of adverse market conditions when they graduated – e.g., low demand years from 1992 to 1995 – but are still interested in teaching;

3) teachers trained outside Ontario -- new graduates and experienced teachers;

4) re-entrants by experienced teachers – those who left the Ontario publicly-funded system to teach in another province or country or to try another profession but decide to return to teaching in Ontario;

5) underemployed past graduates – e.g., supply teaching while waiting for full-time jobs to open up;

6) "letter of permission" teachers with specialised expertise – e.g., computer science – but no teaching degree, who can teach with a Ministry letter of permission if a board has advertised a position three times without finding a qualified teacher.

Private schools draw upon the same sources to meet their staffing needs. In this report, the projections focus on the supply of new applicants available to the publicly funded system. To the extent that some new applicants are lost to the private school system, an adjustment is entered.

The sources of data and methodological assumptions underlying the teacher supply projections estimates are outlined below.

Supply of New Graduates

The supply of new graduates from Ontario teacher education programs is largely determined by the Province's decision on how many student spaces to fund in consecutive programs.[1] The Province raised the number of funded spaces from 5,000 in 1998/9 to 5,500 in 1999/2000 and to 6,000 in 2000/1. The Province is committed to raising funded spaces by another 500 to 6,500 in 2001/2 and to at least maintain that level for 2002/3 and 2003/4.

Total Ontario B.Ed. graduates exceed the number of funded student spaces in consecutive teacher education programs. Faculties of education have admitted more consecutive students than the number of funded spaces in recent years. In addition, several hundred graduates from concurrent teacher education programs are part of the potential pool entering the job market each year.

However, a small percentage of B.Ed. students do not complete the program. And, a further small percentage of graduates do not apply to the OCT for a certificate to teach in Ontario. Either they leave Ontario to teach elsewhere or they decide to pursue a career for which a teaching certificate is not necessary -- e.g., professional training.

One approach to projecting the supply of new graduates to register each year with the OCT to teach in Ontario would be to project each individual step in this process:

- funded student spaces in consecutive programs;
- excess -- if any -- of total admissions to consecutive programs over funded spaces;
- projected graduates from concurrent programs;
- percentage of teacher education students who drop out before graduation;
- percentage of graduates who do not register with OCT to teach in Ontario.

Working Group members attempted to estimate each step in this process and projected that the total supply of new graduates registering to teach in Ontario will be 6,400 in 2001/2 and 6,475 for each year from 2002/3 to 2004/5.[2] Given the uncertainty surrounding any calculation involving several steps with each step based on assumptions, Working Group members agreed to round the 6,475 estimate up to 6,500. By coincidence, 6,500 is the number of funded student spaces in consecutive programs from 2001/2 to 2003/4. The number of teacher education students from 2001/2 to 2003/4 will affect the supply of new graduates available to school boards for the school years from 2002/3 to 2004/5.

When the commitment to fund 6,500 spaces expires after 2003/4, the number of funded spaces is scheduled to revert to 5,000 for 2004/5 and subsequent years. The Province will review the schedule for funding spaces in consecutive programs before the current commitment expires at the end of 2003/4. For projection purposes, Working Group members agreed to enter 5,000 as the number of new graduates registering to teach in Ontario each year from 2005/6 on. The underlying assumptions are that:

- The number of funded spaces in consecutive programs will continue to be an approximate indicator of the number of new graduates registering to teach in Ontario; and

- Until a schedule for funded spaces in 2004/5 and subsequent years is announced, the level in place prior to the May 1999 and June 2000 announcements of funding

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[1] B.Ed. students are admitted to a consecutive program after completing a first undergraduate degree. In concurrent teacher education programs, students take B.Ed. and other undergraduate degree courses at the same time and generally complete both degrees over the course of four to five years.

[2] The calculation is based on the presumption that unfunded spaces in consecutive programs will disappear. For projection purposes, the presumption is that unfunded spaces will disappear in 2001/2. In fact, the process of unwinding unfunded spaces may be more gradual. The OADE representative on the Working Group expressed a concern that some faculties may still have unfunded spaces after the last increase in funded spaces takes effect in 2001/2. Thus, the actual number of new graduates available to school boards from 2001/2 to 2004/5 may not follow the projection assumed in scenarios A and B. However, any deviations from the projection are not expected to be significant.

increases through 2003/4 is the best prediction of funded spaces for 2004/5 and beyond.

Past Graduates with Little or No Ontario Teaching Experience

In some past years – e.g., early to mid-1990s -- job openings for teacher education graduates were scarce. Some graduates left the profession either immediately after graduating and being unable to find a full-time teaching job or after one or two years of supply teaching.

The OCT reports that 1,176 relatively recent graduates - i.e., within the previous five years – applied for and received new teaching certificates in 1998. Favourable teacher demand conditions in the wake of the retirement wave at the end of the 1997/8 school year may have induced a relatively large number of recent graduates to start careers in 1998. The number of relatively recent graduates applying for certificates dropped to 474 in 1999 and to 419 in 2000.

The drop since 1998 in past Ontario graduates applying for teaching certificates may indicate that this source of new teachers has been depleted. However, this source of supply is unlikely to disappear. Each year, a small percentage of new graduates do not register to teach in Ontario. Some members of this group of non-registrants may decide to start teaching in later years. After weighing all factors, Working Group members reached a consensus on a projection that that the number of past graduates starting their Ontario teaching careers would likely be 300 for each year of the projection period.

Supply of Applicants Trained outside Ontario

Experienced teachers, new teacher education graduates and underemployed recent graduates from outside Ontario are another source of applicants for school boards hiring new teachers.

OCT records provide data on teachers arriving from out of province. 2,598 teachers from out of province received Ontario teaching certificates in 1998, 2,650 in 1999 and 2,191 in 2000. An OCT analysis of teachers arriving from out of province in 1998 and the first 9 months of 1999 showed that 42% came from other Canadian provinces, 32% from the United States[3] and 26% from other countries.[4]

In their 1996 report for the OADE, McIntyre and Smith projected that 1,000 experienced full-time teachers could be drawn from out of Ontario each year from 1996/7 to 2004/5. In addition, McIntyre and Smith predicted that unemployed out-of-province graduates would account for another 700 teachers in each of 2001/2 and 2002/3 falling to 650 for 2003/4 and 2004/5.

The McIntyre/Smith estimates are broadly consistent with OCT data on the number of 2000 out-of-province registrants. Thus, the McIntyre/Smith projections have been entered in the summary table.

The supply of teachers trained out of province may fall slightly if the increase in funded spaces has affected enrolment of Ontario residents in education programs at U.S. (See note 3.) The extent to which this may have occurred is not yet known. In addition, competition for out-of-province teachers may grow if American schools expand their recruiting efforts in the years ahead. To reflect these possibilities, the slight downward trend projected by McIntyre and Smith is maintained for the rest of the projection period to 2009/10. Working Group members reached a consensus on these projections.

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[3] In recent years, Ontario graduates of upstate New York colleges near the Canadian border have accounted for many US-trained teachers arriving in Ontario. The flow of Ontario students to upstate New York teacher education colleges may decline thanks to the 30% increase in Provincially funded spaces at Ontario teacher education faculties from 1998/9 to 2001/2.

[4] OCT statistics cited by F. McIntyre, "Retirements open doors to record number of new teachers" in *Professionally Speaking* (December 1999).

Experienced Ontario Teachers Returning to Teaching

The need to replace experienced teachers who leave the publicly funded Ontario system prior to retirement is the second largest factor behind the demand to hire new teachers. Each year, some teachers leave the system to teach in another jurisdiction, in the private school system, to try another profession or because of illness or disability.

Many of these exits are permanent, but some are temporary. After an absence of one year, a few years or even several years, some experienced teachers return to resume their careers in Ontario's publicly funded system. OTPP data show that the number of inactive members – i.e., not employed and no longer contributing, but not yet drawing a pension – who resume active membership each year when they resume employment as Ontario teachers.

Table D1: OTPP Data on Re-activated Members Who Start Teaching Again	
Calendar Year	**Head Count**
1994	1,407
1995	1,567
1996	1,238
1997	1,858
1998	1,885
1999	2,249

Source: William M. Mercer Ltd., *Valuation of the OTPP*, Appendix C, (1994-98) and OTPP Board - 1999.

For the most recent two data years, 1998 and 1999, re-activated members can be divided according to type of teaching employment – full-time, part-time and casual (supply teaching).

Table D2: Destination of Re-activated OTPP Members Who Start Teaching Again				
Calendar Year	**Full-time**	**Part-time**	**Casual**	**Total**
1998	644	313	928	1,885
1999	880	335	1,034	2,249

Source: William M. Mercer Ltd., special tabulation of OTPP data.

About half of previously inactive OTPP members who return to teaching each year do so as supply teachers. However, for the purpose of projecting a supply of applicants, the issue is how many returning teachers are available to apply for full-time or part-time jobs, not how many actually obtain regular positions. A full labour market projection with estimates of new teachers entering the supply teaching pool and of supply teachers moving up to regular teaching jobs is not possible given available data.[5]

Given the year-to-year volatility in the OTPP data on the number of former teachers reactivating their membership after returning to teaching, a consensus projection was not possible. In scenario A, 2,000 is entered for each year of the projection period. This is consistent with the number of former OTPP members reactivating their membership over 1997 through 1999.

In scenario B, 1,200 is entered for each year of the projection period. This is consistent with the number of former OTPP members reactivating their membership over 1994 through 1996 and with indications from the OCT data that the number of former Ontario teachers returning to the system declined sharply from 1999 to 2000.[6]

Supply Teachers Moving to Full- or Part-Time Teaching Positions

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The career path after graduation for many new teachers includes a few years of supply teaching before obtaining a regular contract teaching job. Supply teachers are part of

[5] Some returnees who end up as supply teachers do so by choice. However, it is unlikely that as many as half of former teachers returning to the profession prefer supply teaching. Supply teachers accounted for 40% of all pre-retirement exits from active OTPP membership in 1998 and 1999. Supply teachers, who leave the profession temporarily to try another career and then return to supply teaching in hopes of eventually landing a regular teaching position, may account for a significant percentage of pre-retirement exits and re-entries. The bulk of reactivating OTPP members likely would prefer regular teaching jobs.

[6] OTPP data on membership flows during 2000 will not be available until later this year. The number of former teachers reactivating OTPP and OCT memberships can diverge. A former teacher may retain OCT membership during a period outside teaching in order to retain the option of returning. Active OTPP membership would lapse when member contributions stop.

the pool of applicants for most teaching openings. In any year, some openings for full- and part-time teachers are filled by promoting supply teachers. This aspect of the labour market for teachers is discussed in background note B on methodology. Labour market flows in and out of the supply teaching pool are complex. The Working Group did not attempt to project these flows.

Letters of Permission

The use of Letters of Permission to employ those who do not have a teaching certificate but do have a background in a specialist area in which qualified teachers are in short supply – e.g., computer science – is discussed in the main body of the report. In this report, Letters of Permission are not treated as one of the standard sources of teacher supply.

Loss to Private School System

In their study of 1991 teacher education graduates, *On Becoming A Teacher*, Laverne Smith and her colleagues found that 3.2% of employed graduates found jobs in the private school system. In the absence of more recent information on a province-wide basis, Working Group members agreed to use the 3.2% figure as the best available estimate of the proportion of new teacher applicants who would be lost to the publicly funded system because they found jobs in the private school system.